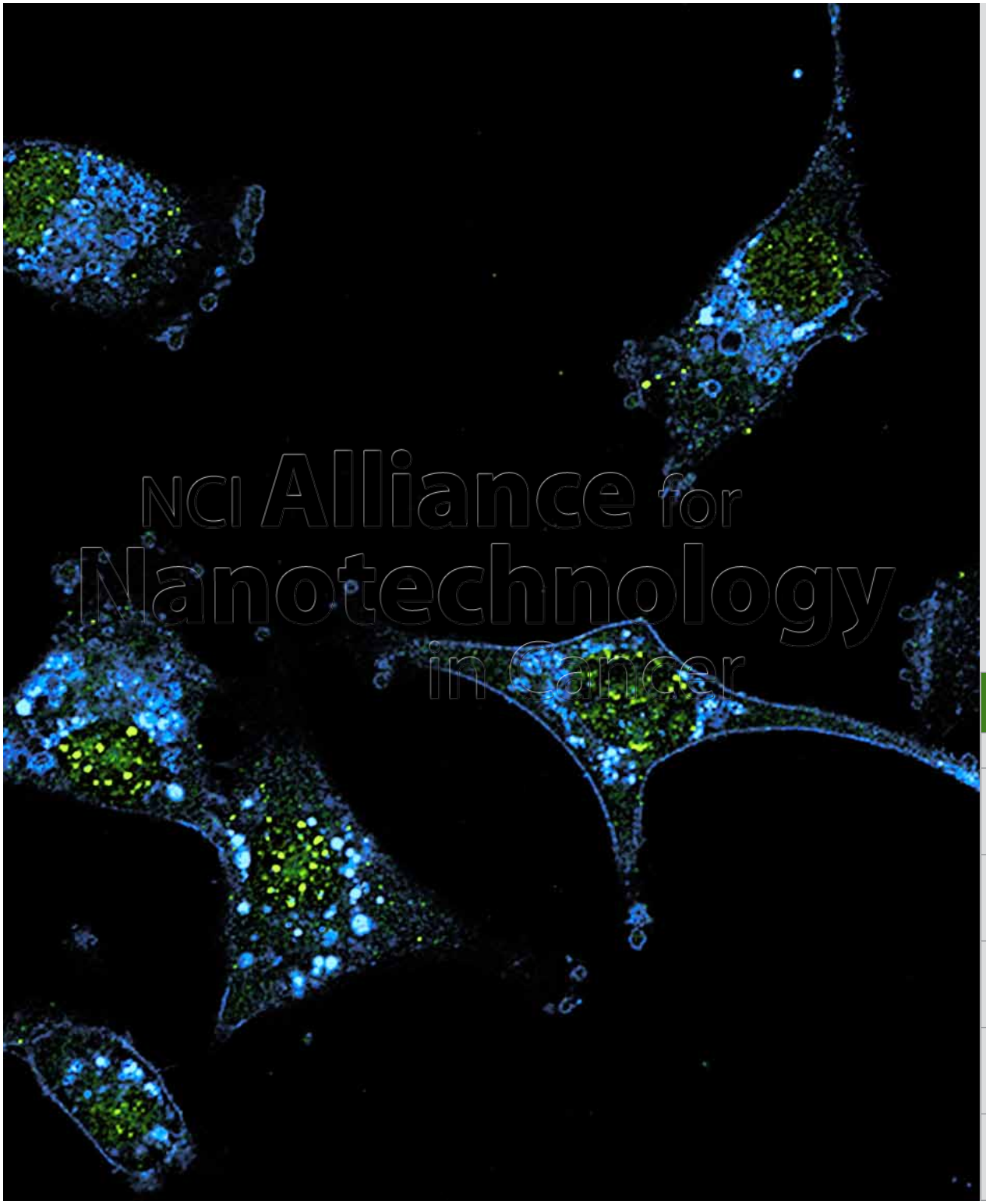

One of the critical issues in designing efficient cancer therapies is understanding the composition of heterogeneous tumors in order to target cancer stem cells and drug resistant subpopulations. Particularly challenging is metastatic melanoma, a disease whose incidence and mortality rates have been increasing over the last few decades, and is highly resistant to conventional chemotherapies. Researchers at the Northwestern University Center of Cancer Nanotechnology Excellence have revealed the re-emergence of a normally dormant Nodal embryonic pathway underlying melanoma stem cell plasticity, drug resistance, tumorigenicity, and metastasis. Understanding the impact of this embryonic signal on tumor cell heterogeneity holds significant promise for new cancer therapies. In this confocal microscopy image, they used SmartFlare™ Detection Probes developed at Northwestern to isolate Nodal positive melanoma cells from a heterogeneous population. The image shows that Nodal (blue) positive cells are also positive for CD-133 (green), another biomarker associated with cancer stem cells and drug resistance.

Credit: Katharine M. Hardy, Ph.D., Mary Hendrix, Ph.D., Gina T. Kirsammer, Ph.D., Elisabeth A. Seftor Ph.D., Richard Seftor, Ph.D., and Don Weldon

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